Table 1
Mean difference (95% CI) between SE group and CG group

	Baseline	FU4m	FU10m	FU29m	p-value
6 min walk test, m	-24.8 (-64.3, 14.7)	-0.2 (-40.7, 40.3)	1.8 (-46.6, 42.9)	-1.8 (-46.6, 42.9)	0.801
Estimated maximal oxygen consumption, ml/kg/min	-1.9 (-8.2, 4.4)	0.0 (-6.4, 6.3)	-1.9 (-9.0, 5.2)	-2.4 (-10.5, 5.6)	0.913
Isokinetic muscle strength, knee extension, Nm	-2.1 (-17.7, 13.4)	3.3 (-12.5, 19.2)	-11.6 (-28.8, 5.5)	-5.7 (-25.8, 14.4)	0.674
Isokinetic muscle strength, knee flexion, Nm	-0.2 (-9.7, 9.2)	-1.8 (-11.4, 7.8)	-7.1 (-17.5, 3.3)	-4.1 (16.4, 8.1)	0.665
Isokinetic muscle strength, hip extension, Nm	-7.1 (-29.3, 15.2)	-4.9 (-27.6, 17.7)	-23.1 (-49.6, 3.5)	-	0.326
Isokinetic muscle strength, hip flexion, Nm	-4.4 (-16.5, 7.7)	-0.3 (-12.6, 12.0)	-12.2 (-26.6, 2.2)	-	0.359
Hip range of motion, total, degrees	12.6 (-5.6, 30.9)	15.6 (-3.2, 43.4)	8.5 (-12.1, 29.1)	-5.4 (-28.8, 18.0)	0.252
Hip range of motion, extension, degrees	-0.1 (-3.2, 3.0)	0.1 (-3.1, 3.3)	-1.7 (-5.2, 1.8)	-0.9 (-4.9, 3.0)	0.888
Hip range of motion, flexion, degrees	7.4 (1.4, 13.4)	4.7 (-1.4, 10.9)	2.1 (-4.6, 8.8)	0.5 (-7.2, 8.1)	0.072
Hip range of motion, internal rotation, degrees	0.3 (-5.4, 6.0)	3.0 (-2.9, 8.9)	4.7 (-1.7, 11.1)	0.1 (-7.1, 7.4)	0.543
Hip range of motion, external rotation, degrees	3.3 (-1.5, 8.0)	5.4 (0.5, 10.3)	-0.1 (-5.4, 5.2)	-2.9 (-9.0, 3.1)	0.116
Hip range of motion, abduction, degrees	1.7 (-1.4, 4.8)	2.3 (-1.0, 5.5)	1.8 (-1.7, 5.3)	-0.4 (-4.4, 3.6)	0.393
Hip range of motion, adduction, degrees	0.0 (-2.5, 2.5)	1.4 (-1.2, 4.0)	1.7 (-1.1, 4.6)	-1.7 (-4.9, 1.5)	0.465

FU10 and 63% at FU29. Twenty-six (68%) of those who did not attend the FU29 follow-up had gone through THA.
There were no significant differences between the two groups for any of the clinical or physical outcome measures over the total 29 month follow-up period (Table 1).
Conclusions: There were no significant differences in clinical or functional performance measures between patients who underwent both supervised exercises and patient education compared to patient education only over the 29 months follow-up period.

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QUADRICEPS-HAMSTRINGS COACTIVATION DURING MAXIMAL STRENGTH TESTING DOES NOT REFLECT COACTIVATION DURING WALKING 3 MONTHS FOLLOWING ARTHROSCOPIC PARTIAL MENISCECTOMY

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Purpose: Persons who have undergone arthroscopic partial meniscectomy to treat a meniscal tear have a substantially greater risk of developing tibiofemoral osteoarthritis than the general population. Muscle activation patterns during walking following APM are different from those of healthy controls; in particular persons who have undergone APM exhibit greater levels of quadriceps-hamstrings coactivation during walking than controls. It has been suggested that the altered muscle activation patterns during walking following APM contribute to abnormal loading of the joint and contribute to the development and/or accelerated progression of osteoarthritis. Neuromuscular training protocols to “normalise” muscle activation patterns in post-surgical populations are gaining popularity in rehabilitation clinics. Such protocols often simultaneously measure torque output and muscle activation and coactivation patterns while participants perform maximal isokinetic knee flexion and extension actions on an isokinetic dynamometer. It is not however known whether muscle activation patterns exhibited during strength testing correspond with those exhibited when walking. The aim of this study was to assess the level of agreement and potential relationships between quadriceps-hamstrings coactivation during isokinetic strength testing with those exhibited during the stance phase of walking.
Methods: Forty-nine persons (40 male, 9 female) aged 42.3 $\pm$ 8.3 years who had undergone APM 12.2 $\pm$ 3.7 weeks prior participated in the study after providing informed written consent. Muscle activation patterns of quadriceps (vastus medialis, vastus lateralis & rectus femoris) and hamstrings (biceps femoris, medial hamstrings group) of the operated leg were measured as participants performed maximal voluntary concentric knee extension and flexion actions through a range of 0o to 90o of knee flexion at 180o•sec-1 on an isokinetic dynamometer (Biodex Medical, Shirley, NY). Muscle activation patterns were also measured during preferred speed walking. For both strength testing and walking trials, quadriceps-hamstrings coactivation indexes were calculated using our previously described procedure. Bland-Altman Limits of Agreement (LOAs) were calculated to quantify the agreement between quadriceps-hamstrings coactivation indexes from the strength and walking trials. Pearson correlation was used to assess potential relationships between quadriceps-hamstrings coactivation levels measured during strength and walking trials, with $p < 0.05$.
Results: Quadriceps-hamstrings coactivation indexes of APM participants were 0.35 $\pm$ 21 during strength testing and 0.46 $\pm$ 0.21, 0.47 $\pm$ 0.2 & 0.44 $\pm$ 0.2 during the loading, midstance and terminal stance periods of the gait cycle. Bland-Altman LOAs of quadriceps-hamstrings coactivation during strength and the loading, midstance and terminal stance periods of walking trials were poor: -0.70 to 0.51, -0.75 to 0.51 & -0.67 to 0.52, respectively. Furthermore, no significant relationships were identified between strength and walking trial quadriceps-hamstrings coactivation indexes.
Conclusions: Quadriceps-hamstrings coactivation measured during maximal isokinetic strength testing does not reflect the levels of quadriceps hamstrings activity during the stance phase of walking gait in persons who have undergone APM. This finding has implications for rehabilitation programs that utilise muscular coactivation during isokinetic exercise to evaluate neuromuscular rehabilitation progress and/or as a biofeedback tool.

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PROGRESSIVE ENHANCED ECCENTRIC OR CONCENTRIC RESISTANCE EXERCISE TRAINING FOR KNEE OSTEOARTHRITIS

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Purpose: Resistance exercise (RX) has been shown to improve physical abilities and reduce knee pain in patients with symptomatic knee OA; however, earlier evidence is fraught with major methodological limitations. Recent, compelling evidence suggests that eccentrically focused resistance exercise (ECC RX) may induce superior increases in muscle mass and leg function at a lower cardiovascular and metabolic cost compared to concentrically focused resistance exercise (CON RX). Currently, there are no published studies comparing pure ECC RX and CON RX on OA pain and physical function. Using an innovative prototype of resistance exercise equipment, our purpose was to rigorously compare eccentrically and concentrically focused RX training on these variables in older adults with symptomatic knee OA.
Methods: Participants with knee OA were randomized to ECC RX, CONC RX or a standard care control group (CON). Participants progressively trained based on pain symptoms 2 times a week for 16 weeks. Measures were performed at baseline and month four: maximal walking endurance, six-minute walk test, chair rise time, stair climb time, numerical pain rating scale (NRSpain; 0-10 points) during ambulation and functional tasks; Maximal strength testing on the major muscle groups as tested using the 1 repetition maximum technique. Western Ontario McMaster Osteoarthritis Index (WOMAC) scores were collected as an assessment of knee pain related effects on physical function.
Results: The 1-RM strength values increased in the ECC RX and CONC RX for the leg press, but increased only in the CONC RX for the leg extension and leg curl. The total WOMAC scores changed from 28.2 to 19.5 points in ECC RX, from 33.9 to 23.0 points in CONC RX and from 27.5 to 25.0 points in the CON. Pain subscores decreased by 40.6%, 27.7%